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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* GARRY DURAN PUCKETT

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Appeal 2019-005940  
Application 14/205,798  
Technology Center 1700

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Before CATHERINE Q. TIMM, JEFFREY T. SMITH, and  
DONNA M. PRAISS, *Administrative Patent Judges*.

PRAISS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant<sup>1</sup> appeals from the Examiner's decision to reject claims 1, 3–9, 12–17, and 19–23. *See* Final Act. 1. An oral hearing was held on July 20, 2020. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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<sup>1</sup> We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies Electric Glass Fiber American, LLC. as the real party in interest. Appeal Br. 1.

### CLAIMED SUBJECT MATTER

The claims are directed to a sizing composition for glass fibers.  
Claim 1, reproduced below, is illustrative of the claimed subject matter  
(disputed limitations italicized):

1. A sizing composition for glass fibers, comprising:
  - a starch in an amount up to about 45 percent by weight on a total solids basis, wherein the starch comprises about 10 to about 30 percent amylase based on starch weight;
  - a nonionic lubricant;
  - a silane comprising at least one amine and at least one aryl or arylene group; and
  - an aminofunctional oligomeric siloxane in an amount of between about 2 and about 12 percent by weight of the sizing composition on a total solids basis, wherein the aminofunctional oligomeric siloxane comprises at least one alkyl group bonded to a first silicon atom and at least one amine bonded to a second silicon atom.*

Appeal Br. 13 (Claims Appendix) (emphasis added).

### REFERENCES

The Examiner relies upon the following prior art references.

| Name    | Reference          | Date          |
|---------|--------------------|---------------|
| Fahey   | US 4,259,190       | Mar. 31, 1981 |
| Mack    | US 6,395,858 B1    | May 28, 2002  |
| Puckett | US 2005/0255316 A1 | Nov. 17, 2005 |

## REJECTIONS

The Examiner maintains the following rejections. Final Act. 2; Ans. 3, 7; Advisory Action dated November 20, 2018, 3.<sup>2</sup>

| <b>Claim(s) Rejected</b> | <b>35 U.S.C. §</b> | <b>Reference(s)/ Basis</b>                          |
|--------------------------|--------------------|---|
| 1, 3–9, 12–17, 19–23     | 103(a)             | Puckett, Mack, Fahey                                |
| 1, 3–6, 16, 17, 22, 23   |                    | Double Patenting Puckett '641 claim 22, Mack, Fahey |

## OPINION

### *Obviousness*

The Examiner rejects claims 1, 3–9, 12–17, and 19–23 under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over Puckett, Mack, and Fahey. Final Act. 2.

Appellant does not separately argue the patentability of the claims over Puckett, Mack, and Fahey, therefore, we select claim 1 as representative and claims 3–9, 12–17, and 19–23 stand or fall together with claim 1. 37 C.F.R. § 41.37(c)(1)(iv); Appeal Br. 4–11.

Appellant contends Fahey's teachings regarding the amount of siloxane to be added to a sizing composition are limited to non-aminofunctional and non-oligomeric siloxanes. Appeal Br. 5–6. Appellant contends the Examiner's rejection is based on impermissible hindsight because a skilled artisan would have had to ignore Fahey's "opposite

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<sup>2</sup> Non-Final Office Action dated April 6, 2018 includes two obviousness-type double patenting rejections over US 7,892,641 B2, issued Feb. 22, 2011 ("Puckett '641"), however, only the rejection over claim 22 in view of Mack and Fahey is maintained in the Examiner's Answer. Ans. 3. Therefore, the rejection over Puckett '641's claim 30 in view of Mack and Fahey is not involved in this Appeal.

teachings on starch in order to select only the amount of an oligomeric siloxane.” *Id.* at 8 (emphasis omitted). Appellant asserts Puckett and Mack provide no teaching, suggestion, or motivation to use starch in an amount greater than 42% on a total solids basis, Fahey provides no teaching, suggestion, or motivation to use less than 50% starch on a total solids basis, and, therefore, Fahey teaches away from the claimed composition and cannot be combined with Puckett and Mack based on Fahey’s higher amount of starch. *Id.* at 9–10. Appellant also argues the Examiner’s finding that Fahey’s amount of siloxane overlaps the claimed amount lacks calculations or substantiation. *Id.* at 6.

We are not persuaded by Appellant’s arguments.

Appellant does not dispute the Examiner’s finding that Puckett discloses a sizing composition for glass fibers that comprises a starch containing up to about 40 weight percent amylose, a nonionic lubricant, and a silane comprising at least one amine and at least one aryl or arylene group in an amount greater than about 10 percent by weight as required by claim 1. Final Act. 2–3. Nor does Appellant dispute the Examiner’s finding that Mack discloses an aminofunctional oligomeric siloxane as required by claim 1 and that Mack’s aminofunctional oligomeric siloxanes possess advantageous properties such as heightened boiling point, increased flash point, and reduced vapor pressure. Final Act. 3–4; Mack 6:33–39. The Examiner’s findings are all supported by the record.

In their briefs, Appellant also does not dispute the Examiner’s finding that Mack explicitly discloses its aminofunctional oligomeric siloxanes are useful as a coupling agent in a sizing composition for coating glass fibers. Final Act. 3; Ans. 12. The Examiner’s finding is supported by the record. Mack Title, 3:7–8 (Among Mack’s nine enumerated methods of using the

disclosed siloxane mixtures is “a method of coating glass fibers, by applying the composition to glass fibers.”). At oral hearing, Appellant’s representative characterized Mack’s disclosure as generally teaching its aminofunctional oligomeric siloxanes are useful “everywhere that silane and siloxanes are used” with the specific utility in a sizing composition being just one application in “a laundry list of potential applications.” Tr. 8. Appellant’s representative questioned whether it would have been undue experimentation to arrive at the claimed siloxane amount useful in a sizing composition on the basis of “finite possibilities” if Mack discloses “thousands of different chemical entities and then probably dozens of uses.” *Id.* at 8–9.

In light of Mack’s explicit teachings that (1) its chemical entities are aminopropyl-functional siloxane oligomers (Mack, Title) and (2) these chemical entities are useful in sizing compositions that coat glass fibers (Mack 3:7–8), plus the absence of any objective evidence of non-obviousness, the selection of an appropriate amount of Mack’s siloxane compound for inclusion in a sizing composition such as Puckett’s sizing composition appears to be no more than a matter of routine experimentation for a person having ordinary skill in the art. Thus the claimed composition would have been obvious in view of Puckett and Mack alone.

The Examiner nevertheless turns to a known sizing composition containing a siloxane as a curing agent—Fahey—for the siloxane content that a person having ordinary skill in the art would have used in a sizing composition. The Examiner finds Fahey’s range of about 0.5 to about 2.0 weight percent of the aqueous sizing composition corresponds to about 1.5 to 20 weight percent of the non-aqueous component of the sizing composition refers to the solids in the composition. Ans. 13–14. The

Examiner's finding is supported by the record. Fahey 10:1–6. Appellant does not provide an alternative calculation of weight percent of siloxane taught by Fahey. *See generally* Appeal Br.; Reply Br. Instead, Appellant argues Fahey's siloxane amount is for a preferred siloxane, gamma-methacryloxypropyltrimethoxysilane, which is neither aminofunctionalized nor oligomeric. Reply Br. 2. Appellant's representative's position at oral hearing is that Fahey's disclosure regarding the siloxane content cannot be extended beyond Fahey's specific chemical entity. Tr. 9.

Appellant's argument is not persuasive of error because in a determination of obviousness, a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art. *Merck & Co. v. Biocraft Labs.*, 874 F.2d 804, 807 (Fed. Cir. 1989) (“That the [prior art] patent discloses a multitude of effective combinations does not render any particular formulation less obvious.”). That Fahey discloses a preferred siloxane does not limit Fahey's teaching to that preferred siloxane. Appellant's argument that a skilled artisan would not expect the same coupling agent effectiveness results for a non-aminofunctional non-oligomeric siloxane for an aminofunctional oligomeric siloxane (Reply Br. 2) also is not persuasive of error because it is not supported by objective evidence. It is well settled that arguments of counsel cannot take the place of factually supported objective evidence. *See, e.g., In re Huang*, 100 F.3d 135, 139-40 (Fed. Cir. 1996); *In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984).

Regarding Appellant's argument distinguishing Fahey's sizing composition on the basis of its starch content, the Examiner finds Fahey discloses a relative amount of siloxane to starch that overlaps Puckett's relative amount of siloxane to starch. Ans. 15. Appellant does not directly

respond to the Examiner's rationale regarding Fahey's proportion of siloxane to starch, but maintains Fahey's preferred siloxane chemical entity is so different that a person having ordinary skill in the art considering the quantity of Mack's aminofunctional oligomeric siloxane chemical entity to add to a sizing composition would find Fahey's instructions irrelevant.  
Reply Br. 3.

The problem with Appellant's argument is that selecting the appropriate amount of a known functional component in a sizing composition, in this case, the amount of a siloxane coupling agent, would have been a matter of routine experimentation for a person having ordinary skill in the art. In *In re Aller*, 220 F.2d 454, 456 (CCPA 1955), the court set forth the rule that the discovery of an optimum value of a variable in a known process is normally obvious (experimentation to find optimum conditions was "no more than the application of the expected skill of the chemical engineer."). Exceptions to this general rule include where the parameter optimized was not recognized to be a result effective variable, *In re Antonie*, 559 F.2d 618, 621 (CCPA 1977), and where the results of optimizing a variable, which was known to be result effective, were unexpectedly good. *In re Wymouth*, 499 F.2d 1273, 1276 (CCPA 1974).

The Examiner finds Fahey teaches curing agents, including siloxanes, enable glass fibers to adhere to a starch coating imparting improved moisture-resistance to the finished product. Final Act. 4–5 (citing Fahey 7:46–49). The Examiner's finding is supported by the evidence cited in this Appeal record. Fahey 7:46–52. Thus, the amount of siloxane curing agent in a sizing composition is a recognized result-effective variable. *See In re Applied Materials, Inc.*, 692 F.3d 1289, 1297 (Fed. Cir. 2012) ("A



recognition in the prior art that a property is affected by the variable is sufficient to find the variable result-effective.”).

When patentability is predicated upon a change in a result-effective variable, the burden is on Appellant to establish with objective evidence that the change is critical, i.e. it leads to a new unexpected result. *See In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990); *In re Aller*, 220 F.2d 454, 456 (CCPA 1955). At oral hearing, Appellant’s representative argues that “it was a significant difference to go from the results obtained with the essentially three-component sizing to the results obtained with the essentially four-component sizing where you’re adding not only a silane but also a siloxane.” Tr. 8. However, Mack explicitly teaches adding the disclosed aminofunctional oligomeric siloxanes to sizing compositions. Moreover, Appellant does not direct us to any objective evidence of non-obviousness in this record. Accordingly, we find the preponderance of the evidence supports the Examiner’s rejection of claim 1, along with claims 3–9, 12–17, and 19–23, as unpatentable over the combination of Puckett and Mack in further view of, or as evidenced by, Fahey.

### *Double Patenting*

The Examiner rejects claims 1, 3–6, 16, 17, 22, and 23 as being unpatentable on the ground of obviousness-type double patenting over Puckett ’641’s claim 22 in view of Mack and Fahey. Ans. 3. The Examiner finds Puckett ’641’s claim 22 recites the sizing composition, but does not specify the addition of aminofunctional oligomeric siloxane. *Id.* The Examiner determines it would have been obvious to a person having ordinary skill in the art to use the aminofunctional oligomeric siloxane of Mack for the advantageous properties of heightened boiling point, increased

flash point, and reduced vapor pressure, in the amounts taught by Fahey for including a siloxane as a coupling agent in a sizing composition, which amounts overlap the claimed amount. *Id.* at 4.

Appellant argues the Examiner's double patenting rejection is in error because the Examiner incorrectly finds the amount of siloxane taught by Fahey includes "any siloxane known in the art" including the claimed aminofunctional oligomeric siloxane. Reply Br. 4 (quoting Ans. 12). As discussed above in connection with the prior art rejection of claim 1, we are not persuaded by Appellant's argument that a person having ordinary skill in the art would not have understood Fahey's teaching regarding the amount of coupling agent in a sizing composition applies to any known siloxane. Based on the Appeal record, we also find it would have been a matter of routine experimentation for a person having ordinary skill in the art of sizing compositions to select Mack's siloxane in an appropriate amount for a sizing composition. Accordingly, we likewise affirm the Examiner's double patenting rejection for the same reasons.

### CONCLUSION

On this record and for the above reasons, we affirm the Examiner's rejections of claims 1, 3–9, 12–17, and 19–23. Because our affirmance is based on findings and explanations which differ from those of the Examiner, we denominate the above-listed grounds of rejection as new grounds of rejection pursuant to our authority under 37 C.F.R. § 41.50(b). *See, e.g., In re Stepan Co.*, 660 F.3d 1341, 1346 (Fed. Cir. 2011); *In re Leithem*, 661 F.3d 1316, 1319 (Fed. Cir. 2011).

## DECISION

The Examiner's decision is affirmed and we denominate the above-listed grounds of rejection as new grounds of rejection.

This decision contains new grounds of rejection pursuant to 37 C.F.R. § 41.50(b). This section provides that "[a] new ground of rejection . . . shall not be considered final for judicial review."

37 C.F.R. § 41.50(b) also provides that Appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new grounds of rejection to avoid termination of the appeal as to the rejected claims:

(1) Reopen prosecution. Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .

(2) Request rehearing. Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

## DECISION SUMMARY

| <b>Claim(s)<br/>Rejected</b> | <b>35 U.S.C.<br/>§</b> | <b>Reference(s)/ Basis</b>                                  | <b>Affirmed</b>        | <b>Reversed</b> |
|------------------------------|------------------------|---|------------------------|-----------------|
| 1, 3–9, 12–17, 19–23         | 103(a)                 | Puckett, Mack, Fahey  | 1, 3–9, 12–17, 19–23   |                 |
| 1, 3–6, 16, 17, 22, 23       |                        | Doubling Patenting<br>Puckett '641 claim 22,<br>Mack, Fahey | 1, 3–6, 16, 17, 22, 23 |                 |
| <b>Overall<br/>Outcome</b>   |                        |   | 1, 3–9, 12–17, 19–23   |                 |

AFFIRMED; 37 C.F.R. § 41.50(b)